

## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Christopher A. Konings Attorney Docket No. BOEI-1-1131  
Serial No.: 10/622,595 Group Art Unit: 3644  
Filing Date: July 18, 2003 Examiner: Barefoot, Glen L.  
Title: NACELLE CHINE INSTALLATION FOR DRAG REDUCTION

Assistant Commissioner for Patents  
Washington, DC 20231

**DECLARATION OF INVENTOR**

Dear Sir:

I, Christopher A. Konings, hereby certify and declare as follows:

1. I am the above-named inventor, am over twenty-one years of age and am competent to testify to the statements herein.
2. Provided hereto at Exhibit A is a combined graph of lift coefficient versus drag coefficient and lift coefficient versus angle of attack for a known wing assembly. I will refer to Exhibit A in the following discussion.
3. In my view, U.S. Patent No. 3,744,745 issued to Kerker et al. does not teach or suggest the invention recited in the claims (as amended) of the above-referenced patent application. Kerker teaches positioning of lift vanes, also called chines, for "improved lifting effect" in that it "delays the premature airflow separation or 'stall' normally encountered on the wing." This is illustrated in Exhibit A, Item 1, where addition of a nacelle chine based on Kerker results in increasing the maximum lift coefficient and corresponding angle of attack. As can be seen in Exhibit A, Item 2a, at a typical operating lift coefficient for takeoff the Kerker chine results in increased drag which reduces the lift-to-drag ratio and corresponding takeoff climb gradient. The above-referenced patent application teaches positioning of a chine to reduce drag at a typical operating point, as shown in Exhibit A, Item 2b. Reducing drag at a typical operating point increases the takeoff climb gradient, resulting in improved takeoff performance.
4. Similarly, U.S. Patent No. 4,685,643 issued to Henderson et al. also does not teach or suggest the invention recited in the amended claims. Henderson teaches a process for sizing

a chine to produce the same effect as taught by Kerker while minimizing the chine drag penalty for the cruise configuration. To that end, it focuses on a chine located on the inboard side of the nacelle to control the vortex shed from the inboard side of the nacelle over the wing, as taught in Kerker. Vortices shed from the outboard side of the nacelle are not considered to "have any substantial degrading effect on wing performance" as taught in Henderson. The above-referenced patent application teaches that controlling the outboard side vortices through use of a chine located on the outboard side of the nacelle can reduce drag at a typical operating point and provide a beneficial effect to wing performance. Again, the effects on lift and drag coefficients of the two different chine installations are illustrated in Exhibit A.

I certify and declare that all statements made herein of my own knowledge are true, and that all statements made on information and belief are believed to be true; and further, that these statements were made with the knowledge that the making of willfully false statements and the like is punishable by fine or imprisonment, or both, under section 1001 of Title 18 of the United States Code, and may jeopardize the validity of any patent issuing from this patent application


Signed this 21 day of March, 2005 at Everett, Washington.

  
Christopher A. Konings

MAIL CERTIFICATE

I hereby certify that this communication is being deposited with the United States Postal Service via first class mail under 37 C.F.R. § 1.08 on the date indicated below addressed to: MAIL STOP AMENDMENT, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

March 22, 2005  
Date of Deposit

  
Wendy Saxby

## Exhibit A.

